REMARKS

Claims 38-53 are pending in the application. Claims 38, 43, 46 and 49 have been amended. Support for the amendments to claims 38 and 49 can be found, for example, in Figures 2,3 and 12-14 of the instant specification. No new matter has been added.

Claim Objections

The Examiner objected to claim 43, on page 3 of the Office Action because it ended with a comma instead of with a period. Applicants have amended claim 43 to end with a period, rendering this objection moot. Applicants found the same typographical error in claim 46 and have corrected it there, as well.

Claim Rejections

Rejections under 35 U.S.C. § 112, second paragraph.

The Examiner has rejected claims 38-53, on page 3 of the Office Action, under 35 U.S.C. § 112, second paragraph, for reciting the phrase "enhancing the level of an immune response". The Examiner asserted, on page 4 of the Office Action, that there is no comparison in the application of a mammal's immune response when it received EtxB and when it did not.

Applicants have amended claims 38 and 49, from which claims 39-48 and 50-53 depend, to specify that the method of the instant claims is one of enhancing a leukocyte mediated or immunoglobulin mediated immune response. The specification shows comparisons of the leukocyte mediated or immunoglobulin mediated immune response in mammals that received and did not receive EtxB at, for example, Figures 2, 3 and 12-14. Applicants submit that this amendment renders claims 38-53 definite, and that one of ordinary skill in the art would be able to ascertain the metes and bounds of these claims. Thus, Applicants request that this rejection be withdrawn.

Rejections under 35 U.S.C. § 102.

The Examiner has rejected claims 38-39, 43-45 and 49 under 35 U.S.C. § 102(b) as being anticipated by Williams *et al.* WO 97/02045 ("Williams"). Applicants respectfully traverse the rejection.

In order to anticipate a claim, a reference must teach each and every element of the claim.[1] Claim 38 from which claims 39 and 43-45 depend and claim 49 are drawn to the enhancement of a leukocyte mediated or immunoglobulin mediated immune response to a vaccine against an infectious disease. Williams teaches no such vaccine. Williams teaches the use of EtxB for the treatment of autoimmune disease.[2] While EtxB is described as a "vaccine carrier"[3] and that this carrier ability is modulated through the ability of EtxB to modulate the activity of lymphocytes[4] there is no teaching in Williams that EtxB is free from whole toxin and is not linked to the antigen, in the context of this vaccine carrier role, only peripherally referred to in Williams. Claim 38 from which claims 39 and 43-45 depend and claim 49 further stipulate that EtxB be free from whole toxin and not linked to the antigen. Williams does not teach all of the elements of claims 38-39, 43-45 and 49 and thus cannot anticipate them.

The Examiner rebuts Applicants previous arguments regarding the lack of anticipation of the claims by Williams, arguing that because the term "vaccine" occurs in the preamble of the claim, that this term is not given any patentable weight. Applicants respectfully disagree.

Whether a preamble limits the scope of a claim is dependent upon the facts of the instant case.[5] As stated in *In re Hirao*, cited by the Examiner on pages 8 and 9 of the Office Action, if the preamble simply cites the purpose of the claimed process, the process steps do not depend on the preamble for completeness and so stand alone.[6] However, as stated in *Kropa v. Robie*, the other case cited by the Examiner on page 9 of the Office Action, if the preamble breathes life and meaning into the claim, then the limitations of the preamble would be read into the claim.[7] In *Jansen v. Rexall Sundown, Inc.*, the Federal Circuit held that the use of the phrase "a human in need thereof," in a claim directed to a method of treating or preventing pernicious anemia in humans by administering a certain vitamin preparation, gave life and meaning to the preamble's statement of purpose.[8] Thus, the preamble was read to limit the scope of the claims.

Applicants have further amended claims 38 from which claims 39 and 43-45 depend and claim 49, to stipulate that the mammal of the claims must be in need of the enhancement of a

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[1] MPEP § 2131.
[2] *See* Williams at page 1, lines 2-4.
[3] *Id.* at page 10, lines 9-10.
[4] *Id.* at page 10, lines 11-12.
[5] MPEP § 2111.02.
[6] In re Hirao, 535 F.2d 67, 70 (CCPA 1976).
[7] Kropa v. Robie, 187 F.2d 150, 152 (CCPA 1951).
[8] Jansen v. Rexall Sundown, Inc. 342 F.3d 1329, 1333 (Fed. Cir. 2003). This is also mentioned in MPEP § 2111.02.

leukocyte mediated or immunoglobulin mediated immune response to a vaccine against an infectious disease. Applicants submit that the preamble of the claim breathes life and vitality into the claims and thus should be read to limit the scope of the claims.

For the above reasons, Applicants request that this rejection be withdrawn.

The Examiner has also rejected claims 38-53, on page 6 of the Office Action, under 35 U.S.C. § 102(b) as being anticipated by Hazama *et al.* Immunology 78:643-649 (1993) ("Hazama"). Applicants respectfully traverse the rejection.

In order to anticipate a claim, a reference must teach each and every element of the claim. Claims 38-53 all specify that the EtxB administered to a mammal in need thereof must enhance a leukocyte mediated or immunoglobulin mediated immune response to a *vaccine*. The Board of Patent Appeals and Interferences has stated that, "a vaccine must by definition provoke an immunoprotective response upon administration."[9] The Board's definition is supported by other definitions in the art, for example, "[A]ny preparation used as a preventive inoculation to confer immunity against a specific disease, usually employing an innocuous form of the disease agent, as killed or weakened bacteria or viruses, to stimulate antibody production."[10] The term "vaccine" is defined in *Microbiology, Fourth Edition* (Tortora, Funke, and Csae eds, The Benjamin/Cummings Publishing Company Inc, 1992, pages 450-451),[11] as follows:

> A vaccine is a suspension of microorganisms (or some part or product of them) that will ***induce immunity*** in a host. (Emphasis added).

In Biology, Third Edition (Arms & Camp eds., Saunders College Publishing, 1987, pages 713-714),[12] provides as follows:

[9] In re Wright, 999 F.2d 1557, 1561
[10] Random House Unabridged Dictionary, © Random House, Inc. 2006.
[11] The relevant portion of which is provided as Exhibit A.
[12] The relevant portion of which is provided as Exhibit B.

> Vaccination against a specific disease produces a primary immune response and thereby creates an immunological memory, ready to trigger an efficient secondary response at the body's first real battle against the disease antigen.

Thus, as evidenced by the above citations, a person of ordinary skill in the art would understand the terms vaccine, or vaccination, to be used to describe a preparation, or the administration thereof, used as a preventive inoculation to confer immunity against a specific disease.

As explained below, Hazama does not teach a vaccine that has enhanced leukocyte mediated or immunoglobulin mediated immune response due to the administration of EtxB. Because Hazama does not teach each and every element of claims 38-53, it cannot anticipate these claims.

The Examiner asserted, on page 7 of the Office Action, that the instant specification teaches that glycoproteins of HSV are vaccines. However, Applicants submit that the instant specification does not teach that the truncated HSV-1 glycoprotein D (t-gD) is a vaccine. T-gD is not mentioned anywhere in the instant specification. However, the instant specification does teach that HSV glycoproteins do act as vaccines. Figure 17 of the instant specification shows the symptomatic outcomes for mice when administered EtxB with HSV-1 gp and without it (mock gp). Across the table, all symptoms associated with HSV-1 infection were lessened when EtxB was administered with the HSV-1 gp, as opposed to mock gp, showing that the HSV-1 glycoproteins of the instant specification are vaccines.

Hazama shows that no combination of t-gD and EtxB or t-gD alone increased protective immunity against HSV infection. Tables 2 and 4 of Hazama show that the administration of t-gD alone, or coupled to EtxB (LTB), to mice had a similar effect on protective immunity to HSV infection as mice that were administered no antigen. As stated on page 647, column 2 of Hazama, "As shown in Table 4, although t-gD-LTB elicited a serum IgG response, it failed to protect mice from viral infection." Thus, t-gD alone also failed to protect mice from viral infection.

Hazama also does not show the use of EtxB to enhance the leukocyte mediated or immunoglobulin mediated immune response of any vaccine. As shown in Table 1 of Hazama, EtxB is only added to t-gD, a substance that Hazama teaches is not a vaccine. Thus, Hazama

does not teach all of the features of claims 38-53 and cannot anticipate them. Applicants request that this rejection be withdrawn.

CONCLUSION

Applicants submit that the claims as here amended put the application in condition for allowance, and such action is respectfully requested. Should any questions or issues arise concerning the application, the Examiner is invited and encouraged to contact the undersigned at the telephone number provided below.

Respectfully submitted,

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